



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/532,004	10/28/2005	Satoru Kobayashi	0099/013001	3827
22893	7590	03/23/2006	EXAMINER	
SMITH PATENT OFFICE 1901 PENNSYLVANIA AVENUE N W SUITE 901 WASHINGTON, DC 20006			SAVAGE, JASON L	
			ART UNIT	PAPER NUMBER
			1775	

DATE MAILED: 03/23/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/532,004

Applicant(s)

KOBAYASHI ET AL.

Examiner

Jason L. Savage

Art Unit

1775

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-13 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-13 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 19 April 2005 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
- 1) ☒ Certified copies of the priority documents have been received.
 - 2) ☐ Certified copies of the priority documents have been received in Application No. ____.
 - 3) ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|--|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>20050419</u> . | 6) <input type="checkbox"/> Other: ____ |

Art Unit: 1775

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1-13 are rejected under 35 U.S.C. 102(e) as being anticipated by Tadauchi et al (US 6,673,310).

Tadauchi teaches a lead free solder which forms a joint comprising Zinc and Tin wherein the zinc content is between 30-95 wt% and tin ranges from 70-5 wt% (col. 4, ln. 49-52). The solder of Tadauchi containing at least 30 wt% zinc would have a liquid phase temperature of greater than 260°C and further would meet the claim limitations in claims 5 and 12 of the temperature difference between the solid and liquid phase being 60°C or greater.

Regarding the limitations in claims 1, 3, 4, 6 and 10 that the solder contain less than a maximum value of other elements such as nickel, aluminum and copper, Tadauchi meets the claim limitations wherein the solder contain 0% of the claimed elements. Tadauchi further teaches that nickel, copper and aluminum in addition to other elements may be blended with the solder material preferably in an amount less

Art Unit: 1775

than 0.5 wt% to provide the solder in enhanced resistance to deterioration over time (col. 6, ln. 3-18).

Regarding claims 2 and 8, the solder of Tadauchi anticipates the claimed zinc content from 30-70 wt% since it overlaps the entire range claimed (col. 4, ln. 49-52).

Regarding claims 7, 9, 11 and 13, Tadauchi teaches the members joined with the solder include copper (col. 5, ln. 51-58).

Claims 1-6, 8, 10, 12 are rejected under 35 U.S.C. 102(e) as being anticipated by JP'341 (JP 56-069341).

JP'341 teaches a lead free solder comprising 30-80% Zn, 0.5-3% Ag and/or 0.01% Cu and the balance Sn (abs.). The solder of JP'341 would have a liquid phase temperature greater than that claimed and would have the claimed difference between the solid and liquid phase temperatures since it has the same composition as that claimed by Applicant.

Regarding claims 1, 3, 4, 6 and 10, the solder of JP'341 has less than the claimed amount of each of the claimed elements of nickel, aluminum and copper.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 7, 9, 11 and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over JP'341 (JP 56-069341).

JP'341 teaches what is set forth above and further teaches that the solder is especially suitable for joining connections (abs); however it is silent to the solder joining copper connections. It would have been obvious to use of the solder of JP'341 with any connection members including copper as claimed with a reasonable expectation of success. Absent a teaching of the criticality or showing of unexpected results, the limitation that the connection members are copper would not provide a patentable distinction over the prior art.

Prior Art Made of Record but not Relied Upon

The following is a listing of prior art which was made of record but not relied upon in the rejections above:

Kranich (US 2,864,733) teaches a solder for joining aluminum and/or other materials comprising 47% Zn, 50% Sn with additions of Si, Cu and Ag (col. 1, ln. 45-55).

JP 06-256922 teaches a zinc solder for joining aluminum which comprises 10-70% Sn, 2-10% Al and the balance zinc (abs).

Jp 07-096386 teaches a high temperature zinc solder for joining aluminum which comprises 10-70 wt% Sn, 2-10 wt% Al, 0.1-4 wt% Cu and the balance zinc (abs.).

JP 11-172353 teaches a high temperature zinc solder comprising 5-20Sn, 4-5% Ge and 5-6% Al (abs).

Art Unit: 1775

JP 2001-121285 teaches a zinc solder for use in bonding semiconductor elements comprising 25-80% Sn and the balance zinc. The reference further teaches that other elements such as Ge, Ag, Cu and In may be contained in the solder between 0.1 – 6% in total (abs.)


Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jason L. Savage whose telephone number is 571-272-1542. The examiner can normally be reached on M-F 6:30-4:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jennifer McNeil can be reached on 571-272-1540. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Jason Savage
3-13-06



JENNIFER MCNEIL
PRIMARY EXAMINER
3/14/06